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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,053	03/29/2006	Naoki Yoshinaga	52433/841	7701

26646 7590 12/08/2008

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EXAMINER	
SHEVIN, MARK L	
ART UNIT	PAPER NUMBER
1793	
MAIL DATE	DELIVERY MODE
12/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,053	YOSHINAGA ET AL.	
	Examiner	Art Unit	
	Mark L. Shevin	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/14/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1-8, filed September 2nd, 2008, are currently under examination. Compared to the claims filed march 29th, 2006 and examined in the previous Office Action mailed May 28th, 2008:

Amended: Claims 1 and 3

Cancelled: Claims 9-14

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted July 14th, 2008 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner. Please refer to applicants' copy of the 1449 form submitted herewith.

Status of Previous Objections

3. The previous objection to claim 1 has been withdrawn in view of the amendments to claim 1.

Claim Rejections - 35 USC § 103

4. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawabe** (JP 2001-226741 – Full Human Translation).

Kawabe

Kawabe, drawn to the production of a high strength cold rolled steel having a tensile strength of greater than 780 MPa and excellent balance in strength and ductility, teaches a steel sheet stock with the following composition:

Element	Kawabe	Instant claims	Overlap
C	0.05 – 0.15	0.030 – 0.10	0.05 – 0.10
Si	0.05 - 0.50	0.30 - 0.80	0.30 – 0.50
Mn	2.5 – 3.5	1.7 – 2.49	*none*
P	0 – 0.02	0.001 – 0.02	0.001 – 0.02
S	0 – 0.0035	0.001 – 0.006	0.001 – 0.0035
Al	0 – 0.01	0 - 0.060	0 – 0.01
N	0 – 0.006	0.0001 – 0.0070	0.0001 – 0.006
Ti	0.001 - 0.05	0.01 – 0.055	0.01 – 0.05
Nb	0.005 - 0.08	0.012 – 0.055	0.012 – 0.055
Mo	0.01 – 1.0	0.07 – 0.55	0.07 – 0.55
B	0.0001 – 0.005	0.0005 – 0.0040	0.0005 – 0.004
Cr	0.01 – 0.5	0.01 – 1.5	0.01 – 0.5
Ni	0.01 – 1.0	0.01 – 2.0	0.01 – 1.0
Cu	0.01 – 1.0	0.001 – 2.0	0.01 – 1.0
Co	n/a	0.01 – 1	n/a
W	n/a	0.01 – 0.3	n/a
Fe	**Balance**	**Balance**	**Balance**

Weldability was cited as a consideration in balancing the amount of carbon to be added to the alloy (para 0011).

From Table 4, the average yield ratio, calculated by dividing all the disclosed yield strengths by the tensile strengths, was 0.712. The average $TSx(EL)^{1/2}$ value was about 4900 $MPa\%^{1/2}$ and the average $YRxTSx(EL)^{1/2}$ was thus about 3500 $MPa^2\%^{1/2}$.

Regarding claim 1, it would have been obvious to one of ordinary skill in metallurgy, at the time the invention was made, taking the disclosure of Kawabe as a whole, to produce a high yield ratio, high strength thin steel sheet as in claim 1 as Kawabe discloses a steel alloy with C, Si, P, S, Al, N, Ti, Nb, Mo, and B additions which overlap the claimed ranges, as well as demonstrated mechanical properties of yield ratio, tensile strength, and elongation which meet the limitations of the instant claim.

With respect to the composition of the thin steel sheet, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed ranges through process optimization, since it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. MPEP 2144.05, para I states: “In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists.”

With respect to the compositional formula at line 18, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, Taklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77, and In re Pilling, 403 O.G. 513, 44

F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al. 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Kawabe.

With respect to the amendment lowering the upper limit of Mn from 3.2 to 2.49%, from MPEP 2144.05, I, para 1: a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

Kawabe taught (para 0013) that Mn is added according to the amount of S contained and provides a structure having a stable bainite phase which is confirmed at a level of at least 2.5%. One would reasonably expect a steel produced by a substantially similar processing method with overlapping composition of all other alloying elements and that possesses the claimed mechanical properties to be close enough, when moving from 2.49 wt% Mn to 2.5 wt% Mn, to have the same properties.

For the same reasons, one of ordinary skill would expect the steel of Kawabe to be superior in spot weldability, as amended.

With respect to the amendments to the yield ratio upper limit and the change of TS x El to TS x $(E1)^{1/2}$, these amendments do not affect the rejections applied as the prior art meet these limitations as stated in the rejection as of the previous Office Action mailed May 28th, 2008.

Regarding claim 2, Kawabe further discloses the incorporation of one of more of Cr: 0.01-0.5%, Ni: 0.1-1.0%, Cu: 0.01-1.0%. These alloying additions, in addition the components disclosed in the rejection of claim 1, render claim 2 obvious to one of ordinary skill in the art.

Regarding claims 3 and 4, with respect to the intensity ratio of the {110} plane, one of ordinary skill would expect such intensity to come principally from the rolling step, which is often used to generate texture and as such the Examiner looks to the process used by Kawabe.

The steel sheet is heated to 1050-1250°C, hot-rolled with a finishing rolling temperature of 900 °C (which is above the Ar_3 for such a low carbon steel) and cooled to 400 °C at a cooling rate of 10-100 °C/s (para 0010). As Kawabe teaches a processing route that is substantially similar to that of the instant claims (per claim 9) , one would of ordinary skill would reasonably expect similar texture properties including the claimed intensity ratio. From MPEP 2112, para. V, subpara 1: "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is

based on 'inherency' under 35 U.S.C. 102, on '*prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same..."

With respect to the amendment of claim 3 in narrowing the yield ratio range, from MPEP 2144.05, I, para 1: a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

One would reasonably expect a steel produced by a substantially similar processing method with overlapping composition of all other alloying elements and that possesses the claimed mechanical properties of claim 1 to be close enough, when moving from 0.712 to 0.72 as a yield ratio, to have the same properties.

5. **Claims 5-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawabe** (JP 2001-226741) as applied to claims 1-4 above, in further view of **Marder** (Arnold R. Marder, Effects of Surface Treatments on Materials Performance, in *Materials Selection and Design, Vol. 20 of the ASM Handbook*, (1997), p. 1-10).

The disclosure of Kawabe was discussed above, however Kawabe neither discloses a further hot-dip galvanizing nor a galvannealing (alloying) process.

Marder

Marder teaches that steels are often coating with a layer of zinc by a hot-dip galvanizing process to improve corrosion resistance (p. 4, para 1). Marder further teaches that weldability, in particular the spot weldability, of zinc coatings is an important property because most galvanized product is joined using spot welding (p. 6, para 1).

With respect to galvanneal coatings (galvanizing followed by alloying by diffusion in a later annealing stage), formability is important because if the forming operation cracks the zinc coating, corrosion resistance will be lessened (p. 7, para 2). Furthermore, galvanneal coatings offer improved spot weldability and paintability over galvanized coatings (p. 7, para 2).

Regarding claim 5-8, it would have been obvious to one of ordinary to one of ordinary skill in metallurgy, at the time the invention was made, taking the disclosures of Kawabe and Marder as a whole, to incorporate the hot-dip galvanizing and hot-dip galvannealing coatings of Marder into the steel sheet product of Kawabe as Marder taught that a galvanized product has increased corrosion resistance and in particular, galvannealed products have improved spot weldability and paintability which would motivated one interested in producing steel sheets as these products are usually use in automotive applications as taught by Kawabe.

Response to Applicant's Arguments:

6. Applicant's arguments filed September 2nd, 2008 have been fully considered but they are not persuasive.

Applicants assert (p. 7 para 2) that spot weldability of Kawabe is inferior to that of the present invention due to the lower Si content of 0.11 - 0.22 in the specification of Kawabe.

In response, Kawabe need not have the same spot weldability of the instantly claimed invention because claim 1 only requires that the steel be "superior in spot weldability..." with no comparative, normative, or quantitative examples present. Furthermore, Kawabe discloses Si in the range of 0.05 - 0.50 at para (0012), which overlaps the claime range of 0.30 – 0.80 wt % Si.

Applicants assert (p. 7, para 3) that it is impossible to conceive the steel sheet satisfying high yield ratio, high elongation, and superior spot weldability according to the present invention from the teachings of Kawabe as Kawabe does not measure spot weldability.

In response, Kawabe teaches a substantially similar steel composition for a sheet products with overlapping ranges of C, Si, P, S, Al, N, Ti ,Nb, Mo, B, Cr, Ni, and Cu produced by a substantially similar process, thus one of ordinary skill would reasonably assume the steel of Kawabe to have the claimed spot weldability qualities and applicants have not shown evidence to the contrary.

Applicants assert (p. 7, para 6 – p. 8, para 1) that Kawabe is directed to a different kind of steel as compared to the present invention.

In response, the ranges of Si and Mn were discussed in the rejection to claim 1 above, however the Si content of Kawabe does indeed overlap the claimed range and the content of Mn, looking at the endpoints, has a difference of 0.4 % or only 0.01 wt%,

which one skilled in the art would not expect to change the overall properties of the steel in view of the overlapping ranges of all the other claimed elements and the substantially similar processing scheme.

Applicants assert (p. 8 para 2 and 3) that the production process of Kawabe is so different from the instant invention such as render the desired microstructure impossible.

In response, the broadest production process claimed by applicants in claim 9 (now cancelled) was shown to be met in overlapping processing parameters (particularly temperature and cooling rate) by the disclosed process of Kawabe as discussed above in claim 3. Applicants have not shown evidence to the contrary.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

-- Claims 1-8 are finally rejected
-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since

other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Mark L. Shevin/
Examiner, Art Unit 1793

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

December 3rd, 2008
10-574,053